

APR 7 1925

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The Public Health Journal

OFFICIAL ORGAN

Canadian Public Health Association

Vol. XVI

TORONTO, MARCH, 1925

No. 3

SPECIAL ARTICLES

CONFERENCE ON MEDICAL SERVICES IN CANADA

CHAIRMAN'S ADDRESS

ALEXANDER PRIMROSE, C.B., M.B., C.M.

HEALTH SURVEYS, HEALTH NURSES AND THE RELATION OF THE MEDICAL PROFESSION THERETO

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Conference on Medical Services in Canada

CHAIRMAN'S ADDRESS

ALEXANDER PRIMROSE, C.B., M.B., C.M.

AT the meeting of the Canadian Medical Association held in Ottawa in June, 1924, it was determined to convene a Congress in Ottawa for the purpose of discussing matters of interest common to all sections of the medical profession in this country. The various activities of the public health service; medical education; the rôle of the licensing bodies, the provincial licensing boards in their relation to the Dominion Medical Council, and the relation of all such bodies to the teaching universities on the one hand, and to the profession on the other; health insurance; procedure in our law courts in the matter of expert evidence; these and other subjects may be discussed in the light of experience gained by different groups of medical practitioners from all parts of our vast Dominion. It seemed fitting that the Canadian Medical Association, which represents all sections of our country from the Atlantic to the Pacific, should inaugurate this movement; a congress so widely representative is capable of accomplishing much good. In Canada, where the large centres of population are so widely separated, we are apt to lack co-ordination in effort; we get self-centred, and we fail to understand that many of the problems which confront us are national and not merely provincial or sectional. This congress is convened for the purpose of uniting our forces. Instead of individual units, each seeking its own selfish interests, we hope to combine our forces and to present a solid front which will be effective in our determination to secure the highest ideals.

PUBLIC HEALTH

State control of public health and the enactment of laws for the prevention of disease are entirely of modern development. By the common law of England, "the only remedy for any act or omission dangerous to health was an action for damages or an indictment for

nuisance." Following the plague epidemic, an Act was passed in 1603 making it a capital offence for an infected person to go abroad after being commanded by the proper authorities to keep his house. After the great fire, the Act for the rebuilding of London (1668) made provision for the height of houses, the breadth of streets, the construction of sewers, and the prohibition of noisome trades. Later, in the most important towns in England, local Acts provided the authorities with power to control public health. The first public health Act embracing the whole of England was passed in 1849. The present controlling authority in England is the "Local Government Board" which was created by the Act of 1871.

In the latter part of the nineteenth century the economic value to the State of the health of the community was recognized in a manner which had not hitherto obtained. That famous British statesman, Benjamin Disraeli, Earl of Beaconsfield, said: "The health of the people is really the foundation upon which all their happiness and all their powers as a State depend."

Numerous Acts dealing with public health have been passed in England since that date. It might be interesting, had one time and opportunity, to summarize the numerous Acts dealing with public health, and to observe that hardly any phase of human activity has been overlooked in the effort to regulate these activities in such fashion that they should not become a menace to health.

The more important are the following: (1) The Education Act with the provision for Meals Act, etc.; (2) The Old-Age Pensions Acts; (3) The National Health Insurance Acts; (4) The Public Health Act, (a) as to hospitals and the treatment of disease, (b) as to maternity and child welfare; (5) War Pensions and Ministry of Pension Acts; (6) Housing of the working class Acts; (7) Acts relating to the relief of the poor; (8) Unemployed Workmen's Act; (9) Unemployed Insurance Act. England was the pioneer of all nations in instituting effective legislation for the maintenance of public health and the prevention of disease.

In the United States of America the care of the public health has secured an ever increasing amount of attention in recent years from both Federal and State Governments. The federal public health service is a well organized body with wide powers; it has been freed from "political restrictions and petty annoyances" so that it is not hampered in rendering effective service to the State. As an illustration one might mention the work accomplished in preserving the health of children. From a recent article on this subject one may quote that "as early as 1892 New York City provided for the inspection by health officers of school children, and by 1920 practically every city had organized some form of health examination for all pupils attending public

schools." The work has extended, and in late years qualified medical examiners have been employed to examine the eyes, throat, teeth, etc., and treatment is often given at the public expense where necessary. Schools in the open air have been opened for tuberculous children, and means have been employed to secure fresh air and suitable nourishment for such children. The extent of this work may be appreciated by the statement that "in 1919 cities having each a population of more than 30,000 expended an aggregate of \$1,849,624 on medical work for school children, and an additional amount of \$908,742 on other child conservation work, such as the employment of trained nurses to visit mothers in congested districts, and the establishment of infant welfare stations where mothers could obtain medical advice and free treatment for their babies."

In Canada we may congratulate ourselves that we are in no way behind other countries in the solution of such questions. Our activities, federal, provincial and municipal, will compare favourably with those of other countries, and indeed in some respects we are in advance of others in our effective management of matters concerning public health. In the various problems which we are to discuss in this Congress, including public health and the different ramifications of that important subject, we are confronted with conditions peculiar to the country in which we live. The extent of this Dominion, with widely scattered centres of population, the nature of our climate and in many instances the divergent interests of the people in different parts of Canada, make it difficult to combine effort and to establish effective measures which will have the whole-hearted support of the entire population. The supreme purpose of the present Congress is to secure the co-operation of the entire country: we hope to be of assistance to the federal authorities, to strengthen their hands; and inasmuch as we represent the whole of Canada from the Atlantic to the Pacific, we trust we may by combined effort provide something of real service in attaining ideals of the highest order in dealing with these questions for the betterment of our people.

INFLUENCE OF MODERN MEANS OF TRANSPORTATION

It is impossible to overestimate the revolutionary effect of modern methods of transportation on our national life. Quick transportation by sea and land, more recently in the air, with added comfort in travel, has induced an ever increasing number of people to go abroad. A continuous stream of travellers pass from one country to another. Not only so, but there is a constant interchange of commodities including food stuffs and the transportation of cattle. The most important factor to be considered, however, is the movement of immigrants. It is no longer possible for any nation to remain isolated and self-contained: the

destiny of each country is inevitably affected by its relations to other countries. This fact was demonstrated and forced upon the attention of the nations of the world during the great war and its aftermath. Among the many points of contact thus established, none have demanded greater attention than those which affect health. The preservation of public health and the prevention of disease has thus become an international problem.

THE LEAGUE OF NATIONS

Embodied in the treaty of Versailles as an article of the covenant of the League of Nations are these words: "Subject to, and in accordance with, the provision of international convention at present sitting, or hereafter to be agreed upon, the members of the League will endeavour to take steps in matters of international concern for the prevention and control of disease."

The Assembly of the League of Nations at its first meeting in Geneva in December, 1920, in accordance with the responsibilities placed upon it by the various treaties of peace, established a permanent international health organization as an important part of the activities of the League.

The health organization of the League of Nations as at present constituted is most comprehensive in its scope and activities. It is well for us in Canada to become familiar with its work and the method of its organization.

A central executive body has been appointed termed the Health Committee, and is composed of sixteen members, namely, the Chairman of the Advisory Council, nine members chosen by the Advisory Council, and six members appointed by the Council of the League after consultation with the Health Committee. Four additional members may be appointed by the Council. The appointments extend over a period of three years.

This Health Committee directs the health work of the League of Nations through a medical director.

There are a large number of sub-committees which have already accomplished much even in the few years of the committees' existence. Some of these we may refer to as an example of the type of work accomplished.

The Epidemiological Intelligence Service of the League of Nations Health Section, organized with the financial assistance of the Rockefeller Foundation, gathers information on the prevalence of infectious diseases throughout the world and endeavours to promote collaboration between the National Statistical Services in order to co-ordinate their efforts.

Weekly or bi-monthly reports are issued from seventy-six countries or colonies with mortality and public health statistics. Statistical

experts from various countries have been invited to Geneva. The central office is in Geneva, and a branch office is projected for the far east. Reports on health organizations in various countries have been published, and others are in preparation. For the first time official contemporary records of epidemic movements throughout the greater part of the world are concentrated in easily accessible form.

Standardization of Sera, Serological Tests and Biological Products.—On the proposal of Dr. Th. Madsen the Provisional Health Committee initiated joint investigation to be undertaken with the view to obtaining an agreement on the standards of potency of all therapeutic sera. The London Conference of December, 1921, fixed the general programme of laboratory investigations. The Danish State Serum Institute, Copenhagen, is acting for the purpose of this investigation as the central laboratory.

There was a special meeting at Geneva in September, 1922, to consider an agreement regarding the international unit of diphtheria antitoxin, and it has now been arranged that States may apply to the Institute in Copenhagen for the retesting of their diphtheria standards to be gauged in comparison with an accepted international standard.

Research on the Standardization of the Following Products is also being carried on: Digitalis extract, pituitary extract, thyroid extract, insulin, ergot, and arsenobenzol.

Standardization of an Anti-Dysentery Serum is being carried on in London, Paris, Warsaw, Basel, Moscow, and Tokio; of *Anti-Tetanic Serum* in Paris, Prague, Washington and Frankfurt; of *Anti-Pneumococcus Serum* in London, Paris, New York and Berlin; and of *Anti-Meningococcus Serum* in London, Paris, New York and Berlin.

The International Incomparability of Mortality Statistics.—The international list of causes of death prepared by the late Dr. Jacques Bertillon in 1886, and revised by international agreement in 1900, 1909, and 1920, constitutes the first practical advance towards international comparability of vital statistics. It is used in full detail only in a few of the signatory countries, and the utility of the statistics is further impaired by the absence of uniformity in registration methods, medical definitions and statistical procedure.

The gathering of medical statistics has advanced but slowly and with little international co-ordination, so that the quality and coherence of the data no longer correspond to the highly developed methods of statistical research. Recognizing this fundamental weakness of medico-statistical work, the epidemiological intelligence service was undertaken:

1. To study, through groups of experts, the incomparability of mortality and notifiable disease statistics viewed internationally.
2. To publish hand books on the vital statistics of various countries.
3. To organize groups of medical statisticians to collectively study statistical procedures in various countries.

An example of incomparability of the facts underlying statistics is given as follows: The fatal issue of an appendicitis is largely conditioned by the occurrence of peritonitis; the latter cause is accepted as sufficient in Italy and the Netherlands, while the primary cause is demanded in the United States and in England. The statistics are therefore not comparable.

Many of these points could be regulated by international agreement, but uniformity of procedure is, as yet, entirely lacking.

Interchange of Health Officers.—Aided by subventions received from the International Health Board of the Rockefeller Foundation, the League of Nations Health Organization has arranged a series of interchanges of health officers of forty-three countries, who have thus been able to study sanitary progress and administration in countries other than their own, accordingly promoting efficiency and international solidarity between health administrations.

Tuberculosis specialists have interchanged, also members of the school of hygiene specialists.

Individual members of our Canadian profession have been active in international health work. In the summer of 1923 the late Dr. C. K. Clarke, Professor of Psychiatry in the University of Toronto, delivered the Maudsley lectures in England, and aroused great interest among the health authorities of Great Britain by his fearless and able discussion of the question of the emigration of the mental defective. The public and professional press of that country paid high tribute to the manner in which he handled the subject, and approved of the helpful suggestions he made.

The International Health Board of the Rockefeller Foundation.—Another of the international health organizations of recent origin is that which has been inaugurated by the Rockefeller Foundation. The International Health Board of that Foundation has already accomplished much for the benefit of humanity. A vast amount of capital has been invested for international service. By a munificent bequest they have made it possible to establish in London what is known as the London School of Hygiene and Tropical Medicine, an institution which is truly international in its aim. It is inaugurated under the able direction of Dr. Andrew Balfour, and is unique in its organization, equipment and objective. More recently the Rockefeller Foundation through its

International Health Board has made provision for the establishment of a school of hygiene in Canada.

On May 20th, 1924, the International Health Board of the Rockefeller Foundation approved of a proposal to assist financially in the creating and endowment of a school of hygiene in the University of Toronto; and the following day the Rockefeller Foundation pledged \$650,000 to the governors of the University of Toronto for that purpose. The governors of the University have accepted the proposals, and the above mentioned sum will be utilized to provide a building to cost not more than \$400,000; the remaining \$250,000 will be used for the endowment of the school. While final details of organization remain to be perfected, the school will include the Departments of Hygiene and Preventive Medicine and Public Health Nursing, and the Connaught Laboratories. The operating or public-service divisions (namely, the anti-toxin and insulin units) of the Connaught Laboratories will be merged to constitute a public-service section of the school.

Hitherto in Canadian universities special courses in hygiene and public health have been available to graduates in medicine. These courses extended over one winter session of eight months and one summer session of three months. After passing a satisfactory examination the candidate received the Diploma of Public Health. These courses have undoubtedly served a useful purpose in the past, but adequate provision has not been made for the complete training of the specialist. We require better equipment and a special staff to meet the demand which is now made upon us. We congratulate ourselves that through the generosity of the Rockefeller Foundation a school is about to be established in Canada where facilities unsurpassed will be available for those who desire to take an intensive course of special study leading to a degree in public health. It is difficult to overestimate the value of this recent addition to our educational institutions; it is a development of national importance, of which we in Canada may well be proud.

Schools for the Training of Specialists in Public Health.—We have already noted certain schools endowed by the Rockefeller Foundation, in Prague, Warsaw and London. We may refer to two other schools endowed by the Foundation which are successfully accomplishing their object. The Johns Hopkins University School of Hygiene and Public Health: this was opened in October, 1918, with Dr. William H. Welsh as Director; Dr. Wm. H. Howell assisting in the work of organization.

The Harvard School of Public Health.—For many years Harvard University has shown a very considerable amount of activity in public health work. In 1909 a department of preventive medicine and hygiene was established. The degree of Doctor of Public Health was first con-

ferred in 1911. In the same year a department of sanitary engineering was inaugurated. In 1913 a department of tropical medicine was formed, and in 1918 a division of industrial hygiene with clinical and laboratory facilities was organized. There were other activities carried on jointly with the Massachusetts Institute of Technology. Thus a substantial nucleus was formed in the university for the establishment of a school of public health of larger scope. This was founded in 1921 and endowed by the Rockefeller Foundation.

Another well-established school on this continent is the school of hygiene and public health in connection with the University of Pennsylvania at Philadelphia. It is an independent institution in that regard.

Apart from the training of the specialist we must not overlook the education of the general practitioner in matters of public health. No matter how efficient the medical health officer may be, he must ever be dependent upon the intelligent co-operation of the general practitioner. More particularly would we emphasize the importance of providing for lectures on preventive medicine, in the many phases of that subject, as a part of the curriculum in the undergraduate course in medicine. It is incumbent upon our Canadian universities to provide adequately for special study in a subject, which, of recent years, has become of ever increasing importance as a progressive branch of medical science.

In recent years an increasing amount of attention has been paid to the education of the public regarding matters concerning public health. This has been carried on through various agencies. One might instance as an example of municipal activity, the excellent bulletin published monthly by Dr. Hastings, the Chief Medical Health Officer of the city of Toronto. This bulletin is issued to every ratepayer and discusses in simple language the best methods of preventing disease. It also contains suggestions for the care of the sick. Bulletins of a similar type are issued by the federal and almost all the provincial health authorities, and sent to all physicians in the province, as well as to the lay public. Other methods have been adopted for the purpose of reaching the public, such as health expositions, and broadcasting of talks on health by radio. Certain other organizations pay special heed to this type of publicity, such as the Canadian Social Hygiene Council in their effort to combat venereal disease, and the Anti-Tuberculosis League. The American Society for the Control of Cancer is, in my opinion, also accomplishing good results both in the United States and Canada. An enormous amount of effort has been expended in the hope of solving the cancer problem, its etiology and effective treatment. The only practical result of clinical observation is to establish the fact that cancer is a curable disease if removed early. The public is being instructed as to the importance of this fact. The Society for the Control of Cancer began

its work in the United States and Canada. More recently the Royal Society of Medicine has taken the matter up, and as a result in Great Britain a very active propaganda, with similar objects, has been inaugurated.

CANADIAN HEALTH ORGANIZATION

FEDERAL ACTIVITIES

Turning now to Canadian organizations in the Department of Public Health, we find that these are federal, provincial and municipal.

The earliest recognition of public health in Canada was the enactment of the Quarantine Act, in 1794. Boards of health were formed in 1832-1834 by the legislature of Upper Canada to combat an epidemic of cholera. In 1874 no less than 98,106 immigrants passed through the port of Quebec. Of these 8,691 were admitted to Grosse Isle Hospital. Deaths from typhus fever among those admitted to hospital were 3,226; in addition 2,198 died on ships detained in quarantine. These victims of typhus were buried at Grosse Isle. There was a typhus epidemic in Canada in the years of 1845-47, of cholera in 1849 and again in 1854-55. In 1849 a central board of health was established in Canada. I am indebted to Dr. MacKay for giving me these figures, which I accepted from his recent monograph, *Ten Years' Experience on the Provincial Board of Ontario*.

Federal activities in connection with public health have thus been carried on in Canada for many years. For more than half a century (1865-1920) Dr. Frederick Montizambert, C.M.G., as Director General was responsible for safeguarding the health of the Dominion. Conspicuous in effective administration may be noted his development of the quarantine and marine hospital services both on the Atlantic and Pacific coasts. He attained an international reputation as an authority on these matters. He was president successively of the American and Canadian Public Health Associations. In the early days after Confederation he encountered many difficulties, such difficulties as are always attendant upon the initial development of a great public service in a new country. How splendidly he accomplished his purpose is universally acknowledged. We do well in Canada to pay tribute to a public health servant who has accomplished so much for the welfare of his fellow-countrymen.

In connection with federal activities we may note the formation in 1911 of the Canadian Public Health Association, under the patronage of the Duke of Connaught. Then again in 1919 a health ministry was established in the Dominion Parliament with Dr. Amyot as Deputy

Minister. Under this ministry was established the Dominion Council of Health, in which the various provinces are represented by their chief executive health officer; these along with five members representing agriculture, labour, etc., including educational bodies, constitute the council.

The work of the council has included, among other activities, an effort to standardize the health regulations of the provinces, the publication of public health literature, the franking of vital statistics and public health returns, the study of public health questions, and the securing of federal aid in promoting such work as clinics for the treatment and control of venereal disease.

Here I would refer in passing to the need of this Congress using its influence to the utmost in urging the necessity of continuing the grant of \$200,000 per annum which has been provided by the Dominion Government for the past five years for the purpose of combating venereal disease in Canada. We learn with concern that it is proposed to diminish this grant. It is true the grant was guaranteed for only five years, and the plea has been made that it was intended for the initial cost of organization. Let there be no misunderstanding on that count. It is easy to show that the expenditure was made not on organization, but on the actual cost of the conduct of these clinics. Those who know the situation recognize the splendid work which has been accomplished for our country under these grants in the last five years. We can only view with consternation the proposal of cutting them down; and in the interests of our fellow-citizens we would appeal to our Federal Government to provide whatever financial aid is necessary for this purpose. It might easily be shown that an *increase* of the present grant would be justifiable for Canada. The problem is first an international one, as is recognized by the Health Committee of the League of Nations in establishing and maintaining researches in various countries in the sero-diagnosis of syphilis. Then it becomes a national problem in which our Federal Government has already taken effective action, which we pray in the interest of the community will be continued with increasing effectiveness. The provinces and the municipalities are already doing their full share.

In addition to other matters the Federal Health Department has under supervision: Quarantine against other countries, the supervision of food and drugs (patent medicines, etc.), the superintendence of marine hospitals, the medical examination of immigrants; publications on public health, research laboratory work, and the organization of the Dominion Council of Health.

Provincial Health Organizations.—I am not in a position to speak historically of the Department of Public Health Service in the various

parts of the Dominion. We know the various provincial boards are doing effective work. The problems differ in different provinces. Those with an open seaboard, with ports open to the outside world, have problems peculiar to that situation. Others are concerned with an international boundary, on our great lakes, etc. The federal and provincial services must act in harmony in connection with problems arising from such conditions. The local provincial boards of health are under the control of the different provincial governments.

Municipal Health Organizations.—Once more I must plead your indulgence by citing as an example of efficiency, an organization with which I am familiar: In the city of Toronto the cost for public health service showed a remarkable increase in twenty-five years: 1909, \$80,610; 1923, \$835,132. Under the regime of Dr. C. J. O. Hastings the death rate has diminished from 15.3 per thousand to 11.4 per thousand. Of the activities inaugurated, one might mention the following: Sanitary dwellings; pure milk and water supply, and pure food; control of communicable diseases; the work done by doctors, dentists and nurses; clinics and child welfare; work in the public schools; health examinations; infant mortality was almost cut in two in ten years; the practical wiping out of typhoid fever. The Toronto city nursing service is a pioneer service in many respects, with 114 nurses on the city payroll. These nurses are engaged in district nursing, pre-natal, infant and pre-school supervision; school service, physical examination, dental service, etc. The Victorian Order of Nurses, engaged chiefly in bedside nursing, work in close harmony with the public health nurse of the city.

Once more we recognize that municipal activities in Canada are effectively organized and maintained in the different portions of our Dominion. The Congress at present assembled is capable of accomplishing results of immense value. Representatives of all branches of the public health service, federal, provincial and municipal, are met for the purpose of studying problems of common interest. By the interchange of ideas, the demonstration of individual problems and by the frank criticism of existing conditions we may be helpful to one another; and thus we hope to increase efficiency and to promote harmony and goodwill in our common endeavour.

MEDICAL EDUCATION

The advances which have been made in the standard of medical education in recent years are noteworthy. There is no branch of education in which more rapid and revolutionary changes have taken place. These changes have been forced upon us because of the ever increasing progress of scientific knowledge and in clinical observation. The present

high status of medical education is not confined to a few centres, but is found in all progressive countries of the world. In Canada our progress has on the whole been satisfactory, and we have been accorded a position second to none in our achievements. This is a young country. While we perhaps lack the experience and prestige of older communities, we possibly have an advantage in being free from certain traditions and precedents which often frustrate the effort to make revolutionary and radical changes, even when these are obviously demanded by the changed conditions induced by progress in science and discovery.

The teaching faculties in medicine of our Canadian universities have evolved a course and curriculum of study peculiarly their own. In the earlier days, it is true, we modelled our curriculum largely on those of the mother country, in particular those of the Scotch universities. But of recent years we have evolved our own course, and in not a few instances we have been pioneers in the raising of standards and in the improvement of the course of study in medicine. Looking abroad to-day we find we fulfil the requirements of the most exacting schools in other countries. If we take, for example, the exhaustive and illuminating report of Sir George Newman, entitled *Recent advances in Medical Education in England* (1923), we find we measure well up to the standards therein set forth as approved by the British universities and enforced by the General Medical Council of Great Britain. It is of interest to observe that in the report referred to, the distinguished educationalist, in his analytical study of medical education in its various branches, refers more than once in commendatory terms to the conditions which exist in Canadian universities.

Twenty-five years ago it was possible for a man to practise medicine and to attain success (measuring success by comparison with the results achieved by his fellows) without the knowledge of more than the rudiments of pure science in its application to medicine. I recall a personal experience of some thirty years ago when I approached one of the leaders of his profession of that time, and asked him to assist in the inauguration of a small club for the study of pathology. He told me he was "a practical man" and was not specially interested in its minute study. He was no exception among men of his class, many of whom were able to produce results in practice well in advance of the large majority of practitioners. In the last quarter of a century the practice of medicine, using that term in its broadest sense to include all specialties, has thrown over empiricism and has now been established on a scientific basis. The effect is twofold as far as the curriculum of study is concerned. First it means a more intensive study in the fundamental sciences of physics, chemistry, biology, physiology and anatomy. These together with specialized training in the more scientific subjects

such as biochemistry, pathological chemistry, pharmacology, hygiene, applied physiology, applied anatomy, etc., demand a great increase in the time allotted to their study. Secondly, the student, having acquired this intensive training must apply his knowledge clinically, and so in turn the clinical teaching demands a great accession to the time previously allotted to it. With his clinical work is linked up the minute study of pathology and bacteriology, which is now of fundamental importance in his training in the clinical years. The inevitable result all along the line is a great increase in the length of the curriculum.

We all deplore the increased length of the course in medicine. It is, however, obvious to anyone who studies the situation that it could not be avoided. If you take, for example, the English speaking countries of the world, you will find in all schools of medicine there is a unanimity of opinion and of action in this regard. We may have different terms for the different periods of the course; some may speak of "pre-medical years," others include such years in the complete course and call all years "medical years." But if you analyze the situation, you will find that the course embraces seven years of special study. Most men (over 90 per cent in one of our Canadian universities) take an additional year as interne in a general hospital. Thus it comes about that a student entering medicine must look forward to a period of eight years before he is qualified to practise his profession. Any school that does not line up to this standard is courting disaster. Graduates of a school with inferior requirements will find themselves handicapped in practice; they will be unsuccessful competitors with their more highly trained fellows. The public are beginning to demand a knowledge of a man's credentials and are no longer satisfied with the mere fact that he is licensed to practise.

It is interesting to study the gradual evolution in clinical training due to the introduction of so-called laboratory methods. At first there was an outcry that students were being taught technical methods with the use of scientific instruments and laboratory tests, to the exclusion of the essential study of the physical examination of the patient. We admit frankly the danger of such disastrous methods of instruction. We also admit that the discussion along these lines was advantageous. The danger, however, has been averted, and in every well organized clinic the methods of physical examination are taught more intensively, more persistently and effectively than has hitherto been the case. On the other hand, students are taught laboratory methods in the diagnosis and treatment of disease. It is absurd to condemn laboratory methods; they must hold their proper place in clinical teaching. A student to-day must be able to utilize the training he has had in the preliminary sciences in their application to disease.

A more recent phase in the evolution of clinical training has been the demand to have such subjects as physiology and anatomy carried over to the clinical years as applied subjects. More recently still is the suggestion that clinical subjects should be taught, in their elementary phases, along with the sciences in the preliminary years of the course. Lastly we have been urged to curtail the preliminary science course and restrict it to those parts of such subjects as physiology, chemistry and anatomy as may be applicable in medical practice. As it appears to me the situation is at present confused and demands some clear thinking. I believe many of the suggestions are made without logical consideration of the actual problem in hand.

Everyone admits that a knowledge of physics, chemistry, biology, physiology and anatomy is essential in medical education. Obviously, we do not require to train men as specialists in these subjects; therefore careful supervision and restriction in the scope of these courses is demanded. I take it, however, that we wish a man to be trained in chemistry so that he can apply his knowledge of chemistry in the diagnosis and treatment of disease. Similarly he must be able to approach a clinical problem from the standpoint of physiology, biology, physics or anatomy.

To attempt to apply these sciences to medical practice at a time when the student is ignorant of clinical problems is waste of time. It must inevitably lead to confusion. In my opinion these subjects should be taught as pure science. There is, I believe, a great deal of nonsense talked about water-tight compartments now-a-days; the logical alternative would be a compartment filled with fragmentary material which has leaked in from neighboring compartments causing a premature precipitation of false conclusions, and resulting in a conglomerate mixture which is hopelessly puzzling to the unfortunate student and impossible for him to digest and assimilate. Surely it is the part of wisdom to do one thing at a time. The student trained in pure science has, to my mind, the best possible equipment for the practical application of that science in the diagnosis and treatment of disease. The course in science, however, should be modelled and arranged by experts who realize that the ultimate goal of the student is that of a general practitioner in medicine. A common sense view of the situation will result in placing these preliminary science subjects in their proper relation to the other subjects of the curriculum of study. The student under such conditions will be better trained, capable of clear thinking and imbued with the scientific spirit, which is more essential to-day than ever before if we, in the medical profession, are to utilize the advances made in science from time to time in the relief of suffering humanity.

I would like to urge the undesirability of uniformity of the curriculum

in our universities. It has been suggested, for example, that licensing bodies should issue schedules of study in each of these sciences, e.g., physiology, anatomy, etc. Not only so, but to stipulate the method of instruction, e.g., so many didactic lectures and so many hours of laboratory work. There is a craze for standardizing everything, including industries and education. The inevitable result will be to kill initiative and to destroy individuality. If we take the subject of physiology, for example, it is surely conceivable that of two effective and efficient teachers, one may cover ground and utilize methods of instruction of an entirely different character from the other. Both have the same ultimate goal, namely, to teach the student the principles of physiology in such a fashion that he may later be able to approach a clinical problem fully equipped to use physiological methods in his bedside work. This end may be gained with equal success by very different methods of approach in the teaching of the particular science. The teacher should be free to use his own peculiar faculties for the attainment of the ideal result. Here again, in my opinion, the standardized water-tight compartment of a fixed schedule is to be condemned outright.

I have touched on a few of the problems which are "live issues" in medical education to-day. We can never produce on a permanent basis an ideal curriculum. Progressive schools of medicine will change their curriculum of study from year to year. We hope to have discussions at this Congress which will assist us throughout Canada in meeting the requirements of to-day, and if we continue, as I trust we will, to meet in annual session, we shall be able to stimulate one another to maintain high standards of medical education, constantly keeping pace with the requirements thrust upon us by ever advancing knowledge in all departments of medical science.

MEDICAL LICENSURE

Each province in Canada, under the British North America Act, controls educational matters; among other things it exercises its right to fix the standard of medical education required for a license to practise medicine. In each province there exists a provincial medical council operating under an Act of the legislature. This is the official licensing body. It accomplishes its purpose in two ways; first by insisting upon a certain curriculum of study, including matriculation standards, and secondly by examination. In some provinces the examinations conducted by the university are accepted by the Provincial Medical Council: in other provinces the council conducts the examinations in whole or in part.

In addition to the provincial council we have a Dominion-wide body,

the Medical Council of Canada which, under certain provincial restrictions, issues a license for practice in any part of Canada.

A general survey of the situation shows that no two provinces of Canada have agreed upon the requirements for license. In fact, the divergence in the regulations is extraordinarily, and one might add unnecessarily, great. The Dominion Medical Council as at present constituted under the federal Act is not concerned in curriculum of study. It conducts examinations and it accepts as suitable candidates for examination those who present what may be called an "enabling certificate," indicating that the requirements of the medical council of the province from which he comes have been fulfilled. These certificates are issued by the registrars of the individual provincial councils.

Canada is a vast country in area, with a population relatively small. We have common ideals in many things and perhaps in no sphere is this more evident than in educational matters. Effort is made from time to time to get the educationalists together in order that each province may contribute towards the establishment of standards of education worthy of the country as a whole. One might instance, for example, the annual conference of Canadian universities, which is accomplishing much toward that end. Surely along similar lines it would be possible to improve the conditions under which we grant the license to practise medicine in Canada.

An effort has been made to secure representatives from each provincial medical council at this Congress to discuss medical licensure. Let us hope a beginning may be made to secure, if possible, something approaching a uniform standard of requirements for the various provinces. We as a profession in Canada would be greatly strengthened by uniting our forces in this respect. Is it too much to hope that one day the Dominion Medical Council, the federal body, may be the medium through which all the provinces, with something approaching uniformity will unite? Would it not be ideal that the various provincial councils should agree to accept the Dominion Medical Council as the sole examining body for license to practise medicine in Canada? Why should Canada with a population of 8,350,000 require nine licensing bodies, when in Great Britain with a population of 45,000,000 there should be one such body only, the General Medical Council of Great Britain?

This is a national ideal for the attainment of which we might well sacrifice certain of our provincial rights and prejudices.

This Congress of individuals concerned in the administration of medical services in Canada is an experiment. The inevitable result of conditions which obtain in this country is to produce varied interests, often conflicting interests, which are difficult to unify. Everyone will concede the desirability of creating national ideals, which will unite the

provinces for common effort. No great revolutionary effort of this kind can be brought about without sacrifice, and it is hoped the representatives of different provinces will be prepared to consider how far they can forego local considerations for the attainment of national ideals.

We hear a great deal now-a-days regarding the evolution of Canada as a nation. The union of the scattered provinces of Canada in national effort has presented many difficulties in varied activities of life. Success has been attained in many directions, but as yet the medical profession is divided with scattered provincial groups each operating without due consideration of the requirements of the other. We trust the beginning made at this Congress will result eventually in combined effort and the establishment of a national spirit which will greatly strengthen our hands. It is hoped the day is not far distant when the medical profession, in all its varied activities of public service, will be united in national organizations, second to none in efficiency and achievement among the great nations of the world.

Health Surveys, Health Nurses, and the Relation of the Medical Profession thereto

Address by JOHN A. AMYOT, M.B., C.M.G.

DR. PRIMROSE has given us food for thought. His address proves that there is a big ideal behind our medical profession in Canada; there is an attempt to make ourselves more useful to the public. It is a serious attempt. We are all thinking of it, and those of us who have had any university experience in drawing up a curriculum know well how earnest that endeavour has been.

Public health, that branch of medicine which looks towards the prevention of disease, has made immense progress in the last few years since we have had certain scientific facts upon which we can base our action. We owe the discovery of these scientific facts chiefly to the energy and efforts of members of the medical profession, with the one exception, possibly, of Pasteur, and after all we look upon him as part of ourselves. All these discoveries have been given to the world freely by the medical profession; all have been put into the common pot. It is a principle, it is an ideal, it is something that is ingrained in us, that since we have learned from the experience of our predecessors, since they have without reserve put all their knowledge into the common pot, it is for us when we find anything also to put it into the common pot for the benefit of all.

The medical profession has also this to its credit. Its work has been of an idealistic type. Did anyone of you in your practice in city or in town ever attempt to keep people sick in order to make your living out of them? You have made every effort that was possible to prevent people getting sick. I do not know any other profession that does that. It is altruistic work when you get out and fight an unhygienic condition that is resulting in an epidemic of typhoid fever. As Mr. Graham remarked this morning, did any of you ever think of the practice that you were abandoning when you were carrying on such work? You never did. You have gone out idealistically to try and stop human misery.

It is often said of us that we are a sort of a close corporation, that we are licensed, and licensed for our own protection very much as a labour union is. But is that so? We are licensed for the protection of the public. When we get into difficulties with reference to our property or when our liberties are infringed, we go to somebody who knows what the law is, and the governments that we live under insist that licensed

lawyers know the law sufficiently well to secure us our rights and not to allow our property to be wrongfully taken away from us. The lawyers are not licensed to make themselves a close corporation; it is simply to insure protection for the public, to ensure that they shall have a sufficient knowledge of the law to protect our property and our liberty. When we want our children educated we see that the teachers come up to a certain standard of qualifications; the country also when it comes to deal with us demands that a certain standard of instruction and experience shall be required of us. We are not a close body. It is not for the protection of the medical profession that we are licensed; it is for the protection of the public, and wise legislators have provided for that. Experience has shown that it is necessary to have it so.

Now advances in public health have resulted out of that idealistic principle that is in every medical man's heart from the time he becomes a first year medical student until he goes out to practise. I do not know any college that teaches him selfishness. You try to teach him from the start that he is a peculiar type in the community; the type that of necessity becomes a sacrificer for the rest of the community.

The medical profession has advanced public health. The public have become interested in public health. The principles laid down by the medical profession, based on the scientific knowledge which they have evolved at the cost of great effort and sacrifice, have benefited the public, and the public is commencing to see the value of it. The knowledge of matters pertaining to public health is becoming common property. The public knows far more about public health to-day and the possibility and necessity of protecting their lives and their happiness than ever before, and who is responsible for this advance? The medical profession has taught it to them. You have only to look at the group of health officers in a province or municipality to recognize the efforts they have made to teach that public. And now the knowledge is becoming general; it is wider than it ever was before. Compare conditions to-day with conditions twenty-five years ago. Time has brought certain changes in the situation. The public has demanded men who knew more and who could spend more time on public health than it ever did before. The subject of public health has become a specialty just as much as neurology, internal medicine or surgery, and the men interested in public health have gone just as far in their special lines of work and done just as much hard work as you have done in your special lines of work. They have obtained what is really specialized knowledge. That is not always realized. I can take my own experience as an example. I quit the practice of medicine in 1900, after practising nine years. I had made as much effort as I could during that time to make myself fit for that work. Since 1900 I have spent every hour of the twenty-four

thinking of public health. I, and other public health men, think of public health day and night. A man one time questioned my right to discuss a water system in a certain city. I said: "I have been at this thing now something like ten years. I have done all the work; at least, I have studied the water question as a bacteriologist and as a chemist; I have done it experimentally. I have seen all the water purification plants of this country and the United States. I have checked the results of my work bacteriologically and experimentally. I have studied the physics of water filtration; and have studied the results obtained by filtration; I have also studied why these filters were necessary; at the end of ten years of intensive study of that kind I think I have some right to a personal opinion on this subject. I think I am better qualified to speak on it than a man who has been doing work in medicine in other directions and has never been thinking about these questions." I give that as an example simply to show that public health men have gone out specializing in certain lines. You will excuse, I am sure, that personal, perhaps selfish note that I have sounded; but this you must realize, that public health men are doing a specialized line of work, and the men who are doing that work effectively have had to have a special kind of knowledge, and we have some right to our opinions. Sometimes we meet opposition in our endeavour to try and have things improved. Consider always that the public health men have reason for the statements they make and the things they advocate. Public health men come more intimately into contact with the public; we have to some extent got away from the ordinary work of the medical profession. We are in the public's confidence and they are in ours, and we have points of view that the medical profession would do well to bear in mind. I am not going to touch on that any further.

There are two subjects I have been put down on the programme to speak about this morning; health surveys and public health nurses. First, as to health surveys: we have got to the stage where we want to appraise and find out exactly what has to be done. We want to know the enemy we have to fight. Provincial bodies—of course, we have no right to step into any province except where they ask our advice—have established what we know as health surveys. In the province of Quebec at the present time, in the city of Three Rivers, such a survey is being held by men skilled in their work. The object of that survey is to find out how much tuberculosis there is actually present in the city. Why is it there is such a large child mortality in that place? If we can clear it up there, and make a demonstration in that one place, the knowledge that will be gathered there will be used in other places. The province has put into that place, with the help of the Anti-Tuberculosis League of Canada, officers who are specialists in tuberculosis and child diseases,

and they are inviting the public to come and have themselves and their children examined. We are thus reaching people who did not get to the medical profession at all. The aim of the survey is not to treat the people. It is to find out whether they are sick; if they are sick they are sent by these inspecting officers to the local doctors to be treated. They are attempting to make an examination of these people to find out just what should be done, and to wake up the public to the fact that there is an evil that needs to be corrected. I know that in some quarters this method is questioned. But the work can be carried on without friction, and does no harm to the medical profession.

Public health nurses are necessary. The public health nurse has come to stay. It is not possible in the present state of things to employ full-time medical men for all the work that we need done in examining school children, and in other things. We pick the most skilled ones we can get, and the ones we can get with the greatest economy. We are using the nurses who have had experience with the people close at hand, and who have their own peculiar ways of getting information and gaining the confidence of the people. The public health nurse is developed to do that work, and is being used in the public health service to get where nobody else could get. They go into the families and find out what really is wrong. Often there are conditions that could very well be corrected if the people only knew, and the public health nurse is the one who can go and find that out. When they find out what is wrong the endeavour is always made to direct those who are sick to those who have the skill to treat them for their ills. In no place is the public health nurse taking the place of the physician. Nurses in every well organized public health service are directed to send the people who are sick to physicians. Many laymen's associations want us to go further. The public health service is the buffer between the profession and the public, and it is through the public health nurse that special work can be done. The public health nurse has come to stay; the health survey has come to stay; the public has demanded it. So co-operate with us to the best of your ability, and try and find out just what the object is, and do not obstruct it. When I say, do not obstruct it, I mean use your influence to keep those who do obstruct from doing so. Encourage us as much as you can. I know that the great heart of the medical profession is with us, and is behind this movement. There are those who are in opposition and criticize this method of dealing with sickness among the public, but I think criticism has arisen because of a lack of knowledge of what actually is being attempted. It is for the general profession, for you gentlemen, to try and smooth out any little opposition. Thank you.

Medical Licensure

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Toronto

TOO often it is assumed that medical licensure is for the protection and benefit of the practitioner of medicine. Nothing can be farther from the fact. Protection of the profession is not the purpose of licensure—it is a result. Protection of the public is the real object of licensure. To discuss licensure on any other basis is not merely futile, but dangerous; dangerous both to the public and to the profession.

Medical licensure is a function of the individual province, not of the Dominion. Each province has, for administrative purposes, confided this function to some body, educational or professional. The action of the administrative body requires the consent or confirmation of the province, and may, and often does, come under its scrutiny, criticism and even revision.

In every province the governing body, the College of Physicians and Surgeons, commonly known as the Medical Council, has set forth certain requirements for the acquiring of a medical license. (A) Preliminary education; (B) A course of instruction (i) in certain subjects, (ii) for a certain number of years; (C) Passing of certain examinations.

(A) *Preliminary Education.*—It should not be forgotten that, by the British North America Act, education is a matter solely under provincial control; the Dominion has nothing to do with it. Those of us who have had experience in the Medical Council of Canada have learned that some of the provinces are very jealous indeed of their provincial rights, and that uniformity as to preliminary medical education is not the simple matter it may appear. Educational ideas are different in the several provinces. That one ideal is better or more desirable than another I leave you to decide.

The provinces do not even approximate uniformity in their matriculation requirements. The announcements of the several provincial councils reveal a wide difference in the matriculations, dependent upon educational ideals, or upon the equipment of the primary schools. This difference is not to be wondered at, for education is not compulsory in all of the provinces. In some it is a matter of comparatively recent enactment. Because of this there must be a difference in the educational requirements of the public schools, and of the high schools—this in turn necessitates differences in matriculation. These differences are not irreconcilable. Time will probably bring an equality of preliminary education. If it is thought wise to discuss the requirements of prelimi-

nary education I would suggest that the minimum requirements that will enable a student to grasp the subject of medicine engage our attention. We can, without coming into conflict with educationalists, discuss the second requirement which is purely professional.

The second requirement is courses of instruction; (a) for a given number of years, (b) in certain medical subjects.

There would seem to be but little difficulty in coming to an absolute uniformity of standard and yet there are serious variations. One practical difficulty is that the councils are not teaching bodies. Instruction is given, not by the medical councils, but by the universities which are independent of the councils, and each of which has ideals of its own; ideas and ideals which in the very nature of things must change more quickly than those of the medical councils, and which are not uninfluenced by financial and local conditions or even by political considerations.

The western provinces, Manitoba, Alberta and Saskatchewan, form a group which has recognized the value of the practical association of the licensing and the teaching functions and has confided the curriculum and examinations to the provincial universities. Other provinces have no provincial universities or have so many universities that it has been impossible to confine the examinations and curriculum to any one university, so that the Medical Council has been forced to keep these matters under its own control.

Number of Years.—The number of years of professional studies demanded varies from five years of six months to six years of eight months of teaching. In other words, some provinces demand a course half as long again as others.

One province demands two years of pre-medical study followed by five years of professional study. Other provinces do not demand any pre-medical study. The tendency of the universities is increasingly to demand the pre-medical years. This demand no doubt arises from dissatisfaction with preliminary education and from a knowledge that an adequate medical education requires an increasingly broad foundation of general education.

Medical subjects demanded.—The provinces are at one as to the subjects regarded as essential, viz., anatomy, practical anatomy, chemistry, practical chemistry, physiology, materia medica and therapeutics, surgery, clinical surgery, medicine, clinical medicine, obstetrics, diseases of women and children, medical jurisprudence, hygiene and pathology.

How great a variation may exist is shown by the fact that in the syllabus of some of the provincial councils there is wanting one or more of such subjects as chemistry, physics, histology, embryology, pharmacy, toxicology, bacteriology, ophthalmology, diseases of the ear, nose and throat, psychology, psychiatry.

The requirements in *practical subjects* exhibit a like variation, especially in obstetrics and hospital attendance.

As to Obstetrics.—Some councils ignore all practical experience in this subject. Others demand ten or even twenty cases, and one demands in addition to ten cases eight months practice in a lying-in hospital.

In the Matter of Hospital Attendance.—The requirements vary from nothing to three years. The regulations reveal striking differences as to how many beds a hospital needs in order to afford proper and sufficient clinical opportunities. One province is satisfied with twelve months at a general hospital of fifty beds under the charge of not less than two qualified practitioners. Another demands eighteen months in a hospital of one hundred and fifty beds under charge of not less than four practitioners of whom two must be surgeons. Twenty-four months in an incorporated general hospital is the requirement of one, three years of another. One province demands not merely a certificate of hospital attendance, but goes a step further and requires six months' service as an interne. This interne requirement is a dead letter, but so confident is that province of the necessity of an internship that it now proposes to demand it for one year.

In Examinations.—At least four plans exist.

1. The provincial university conducts the examinations for the councils, or gives a certificate of university examination, which, presented to the council, ensures registration.

2. The provincial council accepts the university examination in the primary subjects, but itself conducts the final examination for license.

3. The council conducts both primary and final examinations.

4. The council conducts examination at the end of each year with the aid of assessors. The percentage necessary to be obtained is in no case less than 50 per cent and goes up to 60 per cent.

From this analysis of the requirements and procedure of the various councils it appears that either some provincial councils are too lax, or others are too severe in their requirements for licensure; or the needs of the various provinces differ; or the council has not given sufficient consideration to the question of what is needed by the practitioner who must possess at least "usual and reasonable skill."

If licensure is for the protection of the public, surely the people of one province have the right to protection of the same grade as those of another. In this lies the argument for standardization of requirements for medical licensure. You must, however, consider the question whether standardization or uniformity is desirable. If desirable, is it feasible? If feasible, how is it to be accomplished? Is it to come from within each province or is it to come from without? What standard is desirable?

The problem has already been attacked from one standpoint, not the standpoint of uniformity of preliminary education, medical education, hospital and laboratory instruction, but of examination. Whether this is the most desirable way, whether it is grasping the shadow and losing the substance may be a moot question, but it seemed the only feasible way, and resulted in the Medical Council of Canada. The Medical Council of Canada was made possible only by the bold step of ignoring all questions of preliminary education, of medical education in all its details, and insisting only on a standard of examination. This is the strength of the Medical Council of Canada, and its weakness.

One must not lose sight of the fact that the license of the Medical Council of Canada exists only by the grace of the provincial councils which accept it without any question of curriculum, mutual reciprocity or standard—a courtesy which they deny to their sister provinces, of whom they demand both mutual reciprocity and an equality of standard and curriculum. As has already been said, by the British North America Act, education is a matter strictly within the jurisdiction of the individual provinces, so that standardization of medical education is a matter for individual action of each of the nine provinces.

Because of the British North America Act, the Medical Council of Canada is limited to examination in professional subjects only, the Canada Medical Act says that its "standard of examination shall not be lower than the highest for the like purpose (registration) in any province." So far no question has arisen as to the construction to be put upon the word "standard," but what does it mean? Is it percentage of examination marks, or character and number of professional subjects, or quality of the examination?

Sooner or later this question must arise. In Ontario, men rejected at the provincial examination have one week later procured the license of the Medical Council of Canada, and demanded registration in Ontario. Nova Scotia has provided for such cases (p. II, paragraph 5) by enacting "no candidate shall be admissible to examination who has been rejected in the subjects of the examination by this or any other licensing board within the three preceding months."

In the working of the Canada Medical Act, the greatest source of trouble has been Section 12. a. "No candidate shall be eligible for any examination prescribed by the Council, unless he is the holder of a provincial license, *or*"—and I draw your attention to the word *or*—"unless he presents a certificate from the registrar of his own provincial medical council that he holds a medical degree accepted and approved of by the medical council of the said province."

There are here two practical difficulties. Some of the provincial councils do not hold their examinations until after the date of that of

the Medical Council of Canada. The results of the university examinations are often not known in time for the provincial council to give the enabling certificate. The difficulty has been met by the councils giving a certificate that the candidate is eligible to take their examination, and later forwarding a certificate of the medical degree having been obtained.

If the Medical Council of Canada were to postpone its examination until the results of the university and provincial council examinations are announced, it might not have any candidates, as the students at once scatter to their homes, rather than be put to the expense of waiting the announcement of results and then writing on another examination.

Quebec alone of the provinces has seen fit not to acquiesce in this *modus vivendi*, and refuses to give an enabling certificate unless the candidate has passed the provincial examination for license and has a medical degree, and has satisfied all the preliminary requirements for license.

Another difficulty is what construction is to be put on the words "his own provincial medical council." Is it the province in which his home is, that in which he matriculated, that in which he has pursued his medical studies, or that in which he intends to practise. A candidate may be a student in medicine *in* a given province and yet not be *of* that province.

It is not for the Medical Council of Canada to put an interpretation on these words; it leaves that to the provinces and accepts without question the enabling certificate of any province. This enabling certificate clause holds within it practically the same danger as will be pointed out in connection with British reciprocity. The student naturally seeks the line, of least resistance, and will present an enabling certificate from the province whose requirements are the least stringent. And there may spring up a money order business in enabling certificates.

Another problem productive of serious complications is that of British reciprocity. Since the onset of the Great War every province, with the exception of British Columbia, has had reciprocity with the General Council of Medical Education of Great Britain.

Provincial licentiates avoid the examination of the Medical Council of Canada. They send to Great Britain their certificate of provincial registration together with a fee, obtain British registration thus, and then register in any province. It is a real money order business in registration certificates, and is resented by many of the provinces. It works out practically as interprovincial registration without any equality of standard of preliminary education or of medical education. To close this back door Saskatchewan has had its medical act changed so that it grants registration only to those registered by passing the examinations of the General Medical Council of Great Britain. As the General Medical

Council does not hold any examinations Saskatchewan has closed the door on the whole British register.

New Brunswick has sought to protect the Medical Council of Canada, by demanding proof of a bona fide residence in Great Britain from those possessed of a certificate of British Registration.

The result, a result not foreseen, is that a graduate from Saskatchewan or New Brunswick can, through British registration enter any other province of Canada, but graduates from the other provinces cannot register in Saskatchewan or New Brunswick.

The Medical Council of Canada has sought reciprocity with the General Council of Medical Education of Great Britain. The latter has done its best to bring this about, but has failed. Not merely has it failed, it has caused Saskatchewan, New Brunswick, and I believe, Manitoba, to give up reciprocity. British Columbia has not had it for years.

Interprovincial reciprocity by the medium of the General Council of Medical Education of Great Britain is impossible so long as provincial pride exists, and there is any disparity in the requirements for medical licensure. Comparison and criticism of standards are inevitable and will always be heard, yet I do not despair of equality of preliminary and professional requirements being attained. Equality is not necessarily uniformity. Equality once attained, there can be no possible objection to inter-provincial reciprocity, British reciprocity being given up entirely, and the provinces agreeing to accept the license of the Canada Medical Council.

This brief résumé of the requirements for licensure reveals a state of chaos which this conference may help to reduce to at least a semblance of order.

Teeth in Olden Times

BY THE HONOURABLE WILLIAM RENWICK RIDDELL, LL.D., ETC.

(Continued from February number)

Then, there was Tobacco which a few years before that time, indeed, had been brought to Spain, "rather for the ornamentation of gardens, than because of its qualities; but now it is very much more noted for its qualities than its beauty". It would be impossible to enumerate all its wondrous medicinal virtues; but the enthusiastic author can say: "Not only does it terminate pain of the teeth arising from a frigid cause the tooth having first been rubbed with a piece of cloth soaked in its juice and a little pill made from its leaf having been inserted in it; but it also checks decay so that it creeps no further".⁴⁶

The fruit and other parts of a tree not named but described as being of the size of the Ilex or Scarlet Oak with bark like that of the Cerrus Aeglyops or Turkey Oak and leaves like the Ash are much praised. "The teeth are stabilized by the powder rubbed on them and receding gums are healed".⁴⁷

"Three years ago there was brought from Mechoacan Province, a certain root called Carlo Sancto, whose distinguished qualities they preach."

"This same plant when chewed helps receding gums and stabilizes the teeth: it also frees them from roughness and decay, and improves the breath; but after use, the mouth is to be washed out with wine to take away the bitter taste."⁴⁸

"A few days ago the Bishop of Cartagena brought from the mainland of the New World, the fruit of a tree from which dropped that tear which they call Dragon's Blood."

⁴⁶Dolores dentium a causa frigida non modò sinit dente prius deterso aliquo linteo eius delibuto, et pilula ex eius folio confecta denti indita, sed etiam ne corruptio serpat, prohibet.

⁴⁷Dentes eodem pulvere fricati stabiliuntur, gingivæ abscedentes sanantur. This tree grows only in one Province and is described in a letter to Monardes by Petrus de Osma et Xarayzeio from Lima, Peru, December 26, 1568.

⁴⁸Idem commanducatus, gingivis abscedentibus auxilio est, dentes stabilit, eosque a scabritia et corruptione liberat, orisque halitum commendat, sed postea vino os eluendum, ad amaritudinem tollendum.

Dunglison, *Dictionary of Medical Science*, p. 175, says "Carlo Sancto Radix, St. Charles Root, found in Mechoachan. The bark is aromatic, bitter and acrid. It is considered to be sudorific and to strengthen the gums and stomach".

Amongst other qualities "it reunites recent wounds, it frees the gums from putrefaction and stabilizes the teeth."⁴⁹

We can appreciate the great esteem in which the inhabitants of the Province of Quito held the teeth when we learn that "the inhabitants of this region are called Guancauilcas and are toothless, for they have a custom to draw their teeth which they offer up to their idols, saying that the best should be offered to them and nothing is more distinguished for a man, nothing more necessary, than the teeth."⁵⁰

Petrus de Osma et Xarayzeio writing to Monardes from Lima, December 26, 1568, expresses the fear that the Indians had sacrificed to their idols a boy of their race because he had disclosed to the Spaniards where to find Bezoar⁵¹ stones, for "the Indians hold these stones as very

⁴⁹*Vulnera recentia glutinat, gingivas a putrefactione liberat et dentes stabilizat*, "Glutino", properly "to glue", is the regular medical term for closing up or uniting a wound; it is used in this sense by Celsus who speaks of "*glutinantia medicamenta*", (VII, 4); and by Pliny who has "*cicatraceutibus glutinandis*", 32, 6, 35, par. 105—see also Celsus, VII, 27, 28; Pliny, 25, 5, 19, par. 43. The French, as Dr. Dunglison says, *Med. Dict., sub voc.* "Agglutinate", use the word "agglutiner" in the sense of "to reunite". He does not seem to be aware that the word "glutinate" was used in English in the same sense—cf. "glutination", "glutinative".

Dragon's Blood is well known in drug stores.

⁵⁰Guancauilcas vocantur eius regionis incolae et edentuli sunt, quoniam pro mori habent ut sibi dentes eximant, quos, suis idolis offerant, dicentes optima quaeque eis offerri debere hominem autem nihil praestantius, nihil magis necessarium dentibus habere. I fancy all will agree on this estimate of the value of teeth—even if they would prefer to keep them in their mouth rather than lay them on the altar.

⁵¹Bezoar stones are stones, calculi, found in the stomach of certain goats or deer—in America of other ruminants—they had a great name as a cureall though practically inert—they do not differ in origin from those sometimes found in the cow.

Petrus de Osma et Xarayzeio in his letter to Monardes tells of a hunt he had taken part in in June, 1568, for animals with the Bezoar stone. I translate somewhat freely:

"The form of the animal from which the Bezoar stone is obtained you have described in your book. Having made diligent enquiry we found a certain kind of animal frequenting these mountains very similar to the goats—except that they are without horns—which you say are found in East India. They are reddish in colour for the most part and feed on healthgiving plants (of which there is great plenty in the mountains where these animals feed), and are so fleet that we could get them only by gunshot.

On the 25th of the present month of June, 1568, I with some friends went out to hunt on the mountains of this region: we were five days hunting and killed some of these animals of which I have spoken: as we had undertaken the hunt for them, we carried along your book.

Having made a large opening we found no stone, even in those of advanced age either in the stomach or in any other part of the body; from which we inferred that they were not similar to the (East) Indian animals. The Indians whom we had taken with us as servants being closely questioned in what part of the body these animals had the stones said that they knew nothing about such stones (as they were most hostile to us and did not wish to disclose their secrets to us). But an Indian lad ten or twelve years old, when he saw us so anxious for this information showed us a certain recep-

valuable and offer them at the shrines of their Idols which they call Guacas and they are accustomed to offer up other very valuable things such as gold, silver, gems, necklaces, animals and boys"⁵²

Perhaps the modern dentist has now heard enough of these old-time teeth; but I cannot refrain from adding something of the wonderful qualities of Guayacan,—our Guaiacum.

Its use in the treatment of the Morbus Gallicus is well known; but its other virtues seem to have been obscured by time—anyway, Monardes tells us that "it stabilizes the teeth and whitens them if they are quite frequently washed with it", *i.e.*, with the infusion or tincture.⁵³

And now I must and will stop.

taculum like a pouch in the animals, in which they received the devoured herbage and after it had been ruminated sent it into the stomach. The Indians wanted to kill the boy then and there because he had shown it to us: and afterwards when we were busy hunting, they caught him and as we learned sacrificed him. The Indians set a great value on these stones and are accustomed to offer them up at the shrines of their idols which they call *Guacas*—they also offer other their most precious possessions as gold, silver, gems, necklaces, animals and boys.

It is a matter for astonishment that this animal is not found in all these Indies except in these mountains of Peru. For I have travelled the whole Kingdom of Mexico, all the Provinces and Kingdoms of Peru and many other regions of the West Indies, and I have never seen these animals except in the mountains of the Kingdom of Peru. . . .

We took nine stones out of the pouch of the first animal we opened; they seemed to be created by the bounty of nature from the juice of these health bearing herbs, which collect in that pouch. We opened also other animals which we killed, in all of which we found stones, more or fewer according to the age. It is to be observed, too, that only the animals which feed on the mountains produce these very valuable stones; for those which take food in the plains, as they eat herbs less salubrious, so the stones in them, useful as they are, are not equal in efficacy to those which are found in animals feeding upon the mountains."

The animals are now known as llamas. The stones were believed to be valuable in all cases of poisoning, in all affections of the heart and to expel intestinal worms; they were a prophylactic against poisoned arrows and admirable in dressing wounds—all imaginary of course, even the vermifuge.

⁵²Indi eos lapides magno habent in precio, eosque in Idolorum suorum delubris, quae *Guacas* vocant et alia etiam preciosissima quaeque offerre solent veluti aurum, argentum, gemmas, monilia, animalia et pueros.

⁵³Dentes etiam confirmat et dealbat si saepius ea colluantur.

The method of preparing the tincture or infusion is most elaborately described.

SUPPLEMENTARY NOTE

It may be interesting to give Celsus' observations on the Teeth—they are to be found in Book VII, cap. XII, sec. 1 of his *De Rê Medicâ*: In cap. XI, he speaks of certain diseases of the Mouth and in cap. XII he proceeds:

"In the mouth there are also some diseases to be cured manually—in the first place sometimes teeth are loose, whether on account of the weakness of the roots or of the defect by the gums drying up. In either case a hot iron should be applied to the gums touching them lightly, not keeping it on. The cauterized gums should be anointed with honey and washed with mead. When the ulcers begin to be clean, drying medicaments are to be applied of the repressive kind.

If, however, toothache appears and it is determined to remove the tooth because medicaments are of no avail, it should be shaved around so that the gum separates from it—then it is to be shaken. This is to be continued until it is easily moved, for to extract an adherent tooth is attended with great danger and sometimes the jaw is displaced. It is even more dangerous in the upper jaw because it may concuss the temples and eyes. There the tooth is to be taken hold of by the hand if possible, if not, by the forceps (forfice) and if it is corroded, the cavity is previously to be filled with lint or well fitted lead so that it will not break under the forceps. The forceps must be drawn straight up lest the root being inclined the fragile bone in which the tooth is fixed be broken, one side or the other; consequently danger is never absent in the operation at all events in the case of short teeth which have roots almost longer. For often where the forceps cannot seize the tooth or does seize it without effect, it seizes and breaks the bone of the gum. Where there is an excess of haemorrhage, one may know that something has been broken off the bone. Accordingly the shell should be examined with the probe (speculum) and drawn with the forceps (vulsella). If this is unsuccessful the gum should be incised until the loose shell of the bone is seized.

If this is not done at once, the jaw hardens externally, so that it is not possible to open the mouth. A hot cataplasm of flour and fig should be applied until pus is excited, then the gum should be incised.

It is to be noted that pus flows profusely from a broken bone—so that even then it is proper to extract—sometimes indeed, from an injury of this kind a fistula makes its appearance which must be got rid of.

A scabrous tooth of which part is black is to be scraped and anointed with roseleaves powdered to which a fourth part of gall-nut and another of myrrh are added. Sour wine is to be held in the mouth frequently, the head is to be covered, much walking, exercise and friction of the head had, while acrid food is not to be used.

If any teeth are loose from a blow or other accident, they are to be tied to others which hold fast, repressives are to be held in the mouth, such as wine in which pomegranate rind has been boiled or into which hot gall-nuts have been thrown.

If, again, in children one tooth grows out before that which should fall first, has disappeared, it should be drawn clean out: while the one which is produced in place of the former, should be pressed daily with the finger till it arrives at the proper size.

Whenever the root is left after the tooth is drawn, it should be extracted with that kind of forceps, the Greks call *rhinagra*" (that is, the 'Punch' formerly used for extracting roots of teeth).

About the last place one would expect to find any tooth remedies is a treatise on Vipers. But in the very celebrated work of Marcus Aurelius Severinus, *Vipera Pythia . . . De Natura Veneno Medecina Demonstrationes et Experimenta Nova* published at Padua, 1651, I read: "Conrad Tigurinus in his work on Serpents adds that the application of a viper's tooth elides toothache: also Pliny in Lib. 30, Cap. 5, alleges dentition

to be promoted by vipers' teeth being attached to the infant. So Ponsettus believes pain in the teeth of adults to be relieved by tying the upper teeth of the enhydrus to the upper teeth of the patient, the lower to the lower. Moreover to scarify the aching teeth of men, around with the largest tooth of the male white enhydrus will effect a cure", p. 359.

The word "enhydrus" is properly "enhydris", literally transliterated from the Greek. Herodotus uses "enhydris" of the otter; lib. ii, 72; iv, 109; but others use the word of the watersnake. Pliny is the only classical Latin writer who has the word at all—he employs it for the watersnake.

In his *Naturalis Historia*, lib. xxx, c. 3, 8, he says: "Moreover, for pains of the teeth some say the ashes of the heads without the flesh of dogs that have died of rabies is a sovereign remedy, dropped with cyprus-oil into the ear on the side of the aching teeth. The largest, left tooth of a dog, the aching tooth being circumscribed; or the bone from the back of a dragon (draco) or of an enhydris—this is a male white serpent—they circumscribe with the largest tooth of this—they rinse the canine teeth with wine reduced to half its volume by boiling. The teeth are scarified with the bones of the lizard (lacerta) taken from its forehead in the full of the moon so that they do not touch the ground . . . the ash of dogs applied with honey assists the slow dentition of children; a dentifrice is made in the same way. For hollow teeth the ash of mouse dung is inserted or the dried liver of lizards. If the heart of a snake is eaten or even applied it is considered effective. There are some who direct to eat a mouse twice a month and so avoid aches. Earthworms boiled in oil and dropped into the ear on the side the toothache is give relief—the ash of the same applied to corroded teeth makes them fall out easily: applied as an unguent it helps aching sound teeth—it should be burned in an earthenware vessel (testa). It is advantageous too to wash the teeth with a decoction of mulberry root in squill-vinegar. Then that little worm which is found in the plant called Venus' Lip inserted in the cavities of teeth is very helpful . . . and bugs from the mallow are dropped into the ears with oil of roses. The fine sand which is found in snail-shells inserted in the cavities of teeth, stops the pain immediately. The ash of empty snail-shells with myrrh helps the gums—the ash of a serpent burnt with salt in a jar along with oil of rose (is) dropped into the ear on the opposite side. The cast off skin of a snake heated with oil and pine-tar is dropped into either ear; some add frankincense and rose-oil. This same preparation inserted in the cavities make the teeth come out without difficulty. I myself think it idle to speak of white snakes sloughing this membrane at the time of the rising of the Dog Star as that does not happen in Italy and it is much less credible that in warm regions this sloughing is delayed so late, and indeed the cast-off skin aged with wax they say draw the teeth quickly. And the tooth of snakes bound on mitigates the pain. There are some who believe that the spider caught with the left hand and ground with rose oil dropped into the ear on the same side is valuable" (The words I translate "spider" are "araneum animal ipsum": they may mean "the shrewmouse"). . . .

"They say that the taste in the mouth is improved if the teeth are rubbed with mouse-ash mixed with honey; some mix the roots of fennel. If the teeth are scraped with a vulture feather, the breath is made sour—while to do the same with a porcupine quill tends to firmness. . . ."

Pliny in another passage, *Nat. Hist.*, lib. xxxii, c. 7, 26, says:

"Toothache is relieved by the gums being scarified with the bones of the sea-dragon the decoction of the brain of a puppy (canicula) in oil, and applied so that the teeth are washed with it once a year. Moreover to scarify the gums with the root of parsnip is very useful in toothache. That is triturated and anointed with white hellebore and it extracts the teeth without trouble. The ash of salt fish burned in an earthen vessel

added to powdered marble is among the remedies: and old tunny fish burned in a new vessel, then tritrated is excellent for toothache. They say that the backbones of all kinds of salt fish burned triturated and unguented are equally beneficial—and frogs are to be boiled one in a half pint (hemina) of vinegar, the teeth washed with the fluid and the fluid kept in the mouth. If squeamishness is an obstacle, Sallustius Dionysius used to hang them up by the hind legs so that the virus would flow out of their mouths into hot vinegar—that he would do with many frogs—he gave frogs to those of stronger stomachs to eat with the broth. They believe that the maxillary teeth (the molars) are particularly healed in this way and loose ones to be made firm by the said vinegar. For that purpose some macerate the bodies of two frogs, the legs being cut off, in half-a-pint of wine dried, the loose teeth to be washed with it. Others attach all of them to the maxillary—others again make a decoction of ten in three quarts of vinegar boiled down to a third, to stabilize the loose teeth. Then, too, the hearts of thirty-six frogs are decocted in a quart of oil under a potlid (*i.e.*, in a covered pot) that this may be poured into the ear, for an aching jaw. Others apply to the teeth the liver of a frog decocted and triturated with honey. All the above is more efficacious if marine frogs are used. If they are carious and fetid they throw a hundred of them into an oven to be dried during the night; then a sufficient quantity of salt is added and this is used for rubbing. The enhydria is a snake living in water and so called by the Greeks. They scarify the gums with four upper teeth of this snake in pains of the upper teeth, with the lower in pains of the lower—some are content with the canine tooth of them. They use too, the ash of crabs; and the ash of mice is a dentifrice."

Sextus Plato, *De Cane*, ix, 24, says:—"For tooth ache burn the tooth of a dog, decoct the ash in half a pint of wine, and gargle with it—a cure will be effected". In the same work, ix, 26, he says:—"That the teeth may grow without pain, burn the tooth of a dog, triturate with honey and rub the gums firmly".

Habderahmanus Aegyptius is said to have directed:—"What is called the canine tooth of a dog appended to the neck of a child whose teeth have not yet appeared, makes their eruption easy without any pain or injury". Delphin Ed. Pliny, *Nat. Hist.*, vol. vii, p. 4,080 note(d).

Quintus Serenus, c. 15, p. 314, says: "If by any chance you complain of corroded teeth burn mouse dung and put it into the gaping openings—the powder of earthworms roasted is also helpful". Marcellus Empiricus, Plinius Valerianus, Galen and others agree in this.

Marcus Aurelius Severinus was born in Calabria in 1580 and died at Naples in 1656—he was first a lawyer then a medical man; he was fond of trepanning and the actual cautery and was one of the first to describe diphtheria. His fame was so great as a professor of medicine as to attract a large number of students to Naples—he was a daring and harsh operator.

"Finally and in conclusion" the celebrated Franciscan Friar, mathematician and botanist of note, Louis Feuillée, in his sumptuous quarto published in Paris, 1725, *Journal des Observations Physiques, Mathématiques et Botaniques*, of what he saw in Chili and Peru, tells us of two plants used by the Natives dentally.

Chala Origani folio. "The natives of this country (Chili) use this plant in severe toothache, washing the mouth with a decoction."

Geranium Columbinum perenne flore purpureo, Vulgo *Core-Core*.

"This plant is admirable for relieving pains of the teeth: the Indians have the root boiled in ordinary water and when they have toothache, they rinse the mouth with it and feel themselves relieved at once; it also has the property of hardening the gums: that is the reason that those of advanced age make great use of it.

I almost forgot our own Samuel Thomson, the founder of the last formal system of

Medicine, the Thomsonian or Botanical School, which had great vogue in the second quarter of the last century and is not quite dead yet though I believe it no longer has a College. Thomson with all his fondness for Lobelia and Capsicum had his own share of good sound "horse sense" and if he did not cure many he saved many from being killed *secundum artem* by the Regulars.

For toothache, Thomson, or at least his followers, (for the copy of his little book in my possession printed at Hamilton, Canada West, in 1833, is silent on the matter) advised to "chew the Xanthoxylum or Tooth bark; a piece the size of the finger nail is sufficient at a time. Repeat till the pain ceases—as effectual as anything of the stimulating kind or No. 6 put in the tooth". Thomson's No. 6 was about the same as Tr. Myrrh. Co., and contained Myrrh, Capsicum and Alcohol, sometimes Camphor and Turpentine. Thomson gives an excellent and cheap dentifrice: "Bayberry or Candleberry . . . is good as tooth powder, cleanses the teeth and gums and removes the scurvy, taken as snuff it clears the head and relieves the head-ache. It may be given to advantage in a relax and all disorders of the bowels. When the stomach is very foul, it will frequently operate as an emetic. For a dose take a teaspoonful (*i.e.*, of the roots dried and powdered) in hot water sweetened". Bayberry is *Myrica cerifera*.

The Sanitary Inspectors' Association of Canada

By MAJOR L. L. ANTHERS

(Read before the Annual Convention, Fort William, Ont.)

TO solve natural problems, one must first study and master the secret workings and tendencies of nature. Wonderful progress has been made during the past century—progress that has been attained only through the most painstaking research on the part of chemists and biological students. This accumulation of knowledge has been put into practical use by our engineers, particularly in the matter of "Health and Sanitation."

To quote a well-known modern authority (Hutton):

"When the now universally adopted system of purification and disposal of the wastes from cities or individual dwellings, known as the biological method, was first introduced, a well-known English Scientist characterized it as a return to nature. That is its best recommendation. It is undoubtedly a return to nature and nature has the power to correct matter, to readjust it, and to render the offensive and dangerous matter harmless to the human race."

During the early ages, primitive man had few natural problems to solve, and these problems were met by an instinct or intuition common to the animals. But with the march of civilization, man began to surround himself with artificial comforts and practices, so much so that he transgressed natural laws (more through ignorance than design), paying the penalty with a "succession of times of plague and mysterious disease, traceable in the light of modern knowledge to horrible sanitary conditions."

The disposal of municipal wastes in large centres that are served by a municipal system of sewers is outside the scope of this paper. What I have to say will come under the head of the disposal of domestic wastes from isolated buildings. This particularly comes under the head of what is commonly called "Rural Sanitation," or "Rural Sewage Disposal." But many of our large cities have expanded beyond their original prescribed limits, beyond the range of the municipal sewerage system, so that hundreds of dwellings, many of the most pretentious character, as well as the modest shack, have to be dealt with individually in respect to the disposal of domestic wastes. The same applies to many large isolated institutions, schools and industrial plants.

The nature of the system of disposal which I will endeavour to

outline is known by what may be termed the biological method—which is simply a return to nature. The solids and other domestic wastes are conveyed to a series of septic tanks, where the solids are broken down and reduced to a liquid condition. The effluent resulting is then conveyed to a disposal field, where, through a process of further biological reaction, viz., sub-irrigation and exposure to the influence of sun and air, the original poisonous and offensive wastes are finally dissipated and rendered harmless. In spite of its simplicity this method is, nevertheless, most effective.

I wish to again quote authorities in this connection.

Wm. Hutton, a well-known Engineer on Sanitation, and the writer of a number of books on this subject, says:

"Wherever sewage purification is necessary to dispose of the wastes of isolated buildings in a manner which will not create offensive or dangerous conditions, the biological method is adopted, and that is likely to be the only method adopted in the future."

In a paper read before the Engineering Section of the British Association at Toronto during August last (1924), Mr. John D. Watson, M.Inst., C.E., says in part:

"Wherever suitable land of ample area is available within a reasonable distance of a great town—which is not common land—irrigation may still claim the premier position, not only as a natural and reliable method of purifying sewage, but one that almost defies mismanagement."

The old-fashioned privy-pit, a most unsavory institution, had a long term of service. Its objections need not be gone into here, they are too generally known. Its day is practically done wherever enlightenment and intelligence prevail.

A most interesting and instructive chart has been prepared by the Sanitary Officers of the City of Winnipeg, which clearly shows that the percentage of typhoid fever cases over a period of years was gradually reduced to a minimum as the outside privies were progressively reduced in number.

The cesspool followed the privy as a means for the disposal of domestic wastes. Its popularity soon began to wane so that to-day it has fallen into ill-repute.

Once more I will invoke authorities: (1) In condemnation of the cesspool, and (2) the tendency toward the adoption of the septic tanks.

R. M. Starbuck, one of the best known recognized authorities of to-day, says:

"The use of the cesspool is a practice to be followed only as a last resort, when no better method can be employed. At best, however, the cesspool is a crude, filthy affair, although in times past it has served an important purpose. The use of the septic tank is to-day leading to

a disuse of cesspools, and it seems only a matter of time when the latter will be largely a thing of the past."

In a bulletin issued by the Department of Health at Ottawa last year (1923) entitled "Sanitation," B. Evan Parry, M.R.A.I.C., Supervising Architect, makes this emphatic statement:

"Cesspools cannot be too highly condemned. Tank treatment should be used without exception where a municipal sewerage system is not available."

Capt. F. A. Dallyn, C.E., Ontario Provincial Sanitary Engineer, who has had a very wide and extensive experience on matters pertaining to health and sanitation, brought forward some very pertinent facts while addressing a gathering of Sanitary Engineers at Toronto last February (1924). "We have," said Capt. Dallyn, "made some very definite canvasses of the Province in the last four years. We locate any premises not connected with a sewer and examine all wells. Eighty per cent. of the wells we have examined, and we have examined over 35,000 of them, show intestinal organisms in small quantities. Over 50 per cent. show these organisms in an ordinary teaspoonful of water. But this does not mean that these will cause typhoid infection. The thing to protect the well from is the immediate entrance of anything from the toilet. The system of septic tank disposal is excellent and will prevent the infection of wells by contagious diseases because that system, if properly installed, will prevent these organisms from getting to the water in time to be of any harm."

While other authorities might be referred to, I think the point has been covered sufficiently, and that the septic tank system may now be enlarged upon.

The accompanying chart is a side elevation of a two-chamber septic tank, with further illustrations showing different types of disposal fields. I will endeavour, with the aid of this chart, to demonstrate the various stages raw sewage goes through, from its initial discharge from the house drain to the septic tank, until it is finally disposed of by sub-irrigation.

Figure 1 is a side elevation of the complete Septic Tank. On the extreme left is shown the main drain-pipe carrying sewage from the house, and connecting with fitting No. 1, which receives the flow and directs it down towards the first chamber of the tank. This fitting also acts as a baffle to prevent the scum or mat which forms over the surface of the liquid in the first chamber, from becoming disturbed or broken up.

It is well to keep the Septic Tank as near as possible to the outside wall of the house, so that there will be no danger of frost lowering the temperature of the discharge before it reaches the tank. However, the

wall of the house should never in any case be utilized for a wall of the tank.

It will be observed that the level of the liquid (or, I might say, the mat) in the first chamber remains constant. This is due to the level at which Fitting No. 2, connecting the two tanks, is placed. This Fitting No. 2 should be installed a few inches lower than Fitting No. 1, to prevent the mat backing up and fouling the house drain.

The first chamber, which, in reality, is the Septic Tank proper, is where the first bacterial reaction (or fermentation) takes place. It is somewhat larger than the second (or dosing) chamber as it is necessary to delay the progress of the sewage in order that sufficient time be given the anaerobic bacteria to break down the solids and make ready the effluent for further bacteriological reaction through sub-irrigation.

It is highly desirable that for the most efficient reaction in this first chamber there shall be no light nor direct flow of air. The anaerobes (as their name indicates) are micro-organisms that work to greatest advantage when protected from the influences of light and air. The formation of the mat or scum on the surface is nature's own protective method towards this end, and it is our desire to assist nature as far as possible by the exclusion of light and air. These anaerobes are most active when the temperature of the liquid in the first chamber is around 60 degrees Fahrenheit. This is another reason for a heavy protective covering over the tank.

It takes from 8 to 18 hours for the anaerobic bacteria to render the affluent in the first chamber ready for discharge into the disposal field. It is true that a certain amount of inorganic matter gathers in a sedimentary deposit at the bottom of the first chamber, but this occurs in such small quantities in a properly constructed and properly working Septic Tank, that, as a rule, it has to be removed only once in from five to eight years.

In the secondary or dosing chamber no bacteriological reaction is looked for, though the effluent or overflow from the first chamber has been by no means rendered pure and harmless in spite of its pellucid colour. It has merely become liquid sewage with certain but not all poisons removed as a result of the initial biological reaction.

This secondary chamber is sometimes called the Syphon Chamber as here the discharge to the disposal field is regulated through the action of an automatic syphon. Particular care must be devoted to the vertical measurements in this Syphon Chamber. The syphon starts to discharge at the high water level, which is always constant when the syphon has been carefully and properly installed. This fact gives us a positive basis to work from. It is quite obvious that this high water level (or point of discharge) should be kept several inches below the discharge line

of Fitting No. 2 that connects the first and second chambers. Furthermore, this same high water level must be kept some distance below the branch of Fitting No. 3, which enters the Syphon Chamber at the top right, as indicated in the illustration. This branch of Fitting No. 3 is often erroneously referred to as "the overflow." That is not its intended function, though in reality that is what it becomes if it should be placed below the water level, or should the syphon become inoperative through improper installation or some unforeseen accident. You may take it for granted that when Fitting No. 3 is acting as an overflow that the system is "on strike" and calling for help.

The real function of Fitting No. 3 is to preserve a balance of atmospheric pressure between the Syphon Chamber and the disposal field during the period of discharge. It also supplies an interrupted or retarded flow of air over the water levels in the tanks, which carries accumulating gases up through the main stack where they are dissipated into the upper atmosphere. For the greater part of the year temperature conditions are such that just sufficient air is kept circulating to carry off gases without interfering with the efficiency of the micro-organisms in the first chamber. But with the approach of cold weather the fresh air inlet should be protected either by tying a jute bag over what is called the breather-cap (in the same manner as one often protects a rose-bush or some other valuable shrub) or by covering the breather-cap with a keg containing a few gimlet perforations. It stands to reason that when the outside atmosphere reaches a very low level of temperature that a rapid circulation of cold air will start through the system (notwithstanding the interruption of flow by intervening fittings) owing to the fact that the main house stack absorbs heat from the domestic heating units. A continuous flow of cold air over the surface will tend to lower the temperature of the contents of the Septic Tank and retard bacterial action so necessary to the efficiency of the system.

For ordinary domestic installations an allotment of from 25 to 30 gallons per person per day is recommended. True, in individual families this requirement may vary, but a fairly accurate survey over a period of years has established this amount (25 to 30 gals.) as the average consumption. No hard and fast rule can be established in this matter as: the number of fixtures, the limit of the water supply, personal habits and other contributing factors make this impossible. It is well to take all these points into consideration when estimating an installation, as the more accurate data obtainable the more efficient can the system be made.

The capacity of the first or septic tank proper should be of sufficient area to hold approximately twice the daily consumption of water of all the inmates. This prevents a rapid passage of the undigested effluent

from the first chamber to the second chamber and thence to the disposal field. As has been mentioned above, a certain period of time (from 8 to 18 hours, varying with temperature and other conditions) is required to allow the anaerobic bacteria to break down the solids and to prepare the effluent for further purification by sub-irrigation.

Before dealing with the disposal field, it were well to give a little attention to the syphon—both as to its operation and its function. The syphon most generally used is known as the Miller Syphon, taking the name of its inventor who first introduced it nearly thirty years ago. Through an evolution of gradual refinement it has become probably the most ingenious as well as the simplest automatic valve known. It is operated entirely by atmospheric balance (the most positive of all natural forces) without any moving parts. If extreme care and accuracy are exercised in its dimensions and manufacture, and if it has been properly installed, it remains an efficient and tireless servant for all time to come. But should the least carelessness be allowed to enter into its construction, and any of the simple but fundamental requirements be overlooked, trouble is almost sure to follow. Nature is positive and insistent in her demands, and where natural laws are being invoked defects will not be tolerated. A perfect syphon imperfectly installed cannot be expected to give perfect results. It requires the combined intelligence of the manufacturer and the user of his materials to give satisfaction. So positive is the automatic discharge of the syphon that very seldom will the water level at the time of discharge show any discernible variation.

Where there is no available area for a disposal field, and the effluent is to be discharged into a nearby stream or river, a syphon is, of course, unnecessary. But stringent laws are being passed by various governing bodies making water pollution by the introduction of sewage a criminal offence. But never under any circumstance should raw sewage be allowed to pass into any body of open or running water, except as where provided for and supervised by a properly constituted Board or Department of Health. It should at least first undergo a process of biological tank treatment, and even then the effluent is by no means harmless.

The importance of the disposal field cannot be overestimated. Here the secondary or further biological reaction takes place and nature finally disposes of and renders harmless the poison laden effluent. All, of course, provided proper care has been taken in preparing the field.

Figure 2 is a top plan of the Septic Tank together with a disposal field, the latter showing laterals of field tile leading off from the glazed pipe trunk line. This trunk line should have very little fall and the joints should be cemented. The laterals should be laid level in trenches never more than two feet in depth. The bacterial reaction looked for

in the disposal field is performed by aerobic micro-organisms. These little workers of nature in countless billions make their home just below the surface of the soil, becoming scarcer the deeper you go. It is therefore essential that the effluent distributed by the laterals should be deposited where the reaction will be the quickest and the most positive. Furthermore, the beneficial assistance of the sun's rays and the action of the air are highly essential to the effective efforts of the aerobes. The anaerobes in the Septic Tank shout: "Keep out the light and the air." The aerobes in the surface soil shout: "Give us light and air." If you do not comply with their demands they will sulk. Unfortunately all ground does not lend itself readily to the requirements of a disposal field. Sandy or gravelly soil, or good black loam, make an ideal disposal field. Where this is lacking and heavy clay or other unsatisfactory soil is met with, it is practically necessary to create proper conditions. When the cold hard winter nights come, the house-owner who has taken the precaution to protect his tank and his trunk line with a heavy layer of straw or manure may rest easy. He has assisted nature and she will appreciate it. This may mean labour and expense, but then you are seeking satisfactory results. Satisfactory results are dependent on satisfactory conditions.

There should be a space of about an eighth of an inch between the ends of the field tile, and around these annular openings gravel or broken stone laid. In fact, wherever the effluent leaves the laterals, including the open ends, gravel or broken stone will add to the efficiency. Stray roots and loose earth are detrimental to good results. To protect the tops of these annular openings it is good practice to lay a strip of tar paper over them before filling in the trenches. The laterals should be laid not less than three feet apart to avoid saturation.

Where a disposal field must be laid on a hillside special provision should be made; but where there is sufficient area almost any problem can be overcome, provided that careful consideration is given the individual problem and proper care is exercised in its solution.

Why is a syphon necessary to a disposal field? The answer is simple. Bacteria have their limitations just the same as human beings. If we were forced to feed continuously away beyond our powers to assimilate food, we would either go on strike or die of over-feeding. We want to eat our meals at more or less regular intervals in order to keep "fit." So with the micro-organisms. Were the effluent allowed to seep out of the septic tank the soil around the nearest laterals would soon become saturated and sour. The aerobes would become drunk with too much food and would "give vent to unhealthy gasses," none too pleasing to the olfactory nerves. Whereas, if the effluent were "shot out" into the whole area of the disposal field at periods of about 12 hour intervals, the

bacteria would thrive, obtaining the necessary rest between meals. This is the function of the syphon. A head of effluent is built up, and at the psychological moment this is discharged with both force and rapidity. The capacity of the laterals in the field should equal the volume of discharge at each operation of the syphon. Thus, with the system properly balanced, satisfaction should be assured.

The subject is by no means exhausted. There is much more that might be said in elaboration, but I believe "the fundamentals" have been outlined sufficiently to convey my message to you. I thank you sincerely for the privilege of appearing before you, and appreciate the compliment you have extended to me by inviting me to take a part in your proceedings. Before closing, I wish to express my gratitude to Edwin Newsome, S.E., Capt. Dallyn, C.E., and Professor Graham of the Ontario Agricultural College, gentlemen whose tireless research along the lines of health and sanitation has made it possible for me to give you this paper.

Monthly Jottings of Sanitary Inspectors

The members will be sorry to learn that we are to lose Mr. H. S. Sturgess, our Branch President for British Columbia. Mr. Sturgess has been a member for over ten years, and during that time has been one of our most loyal members. He goes back to England next month to fill an important position. Mr. Sturgess is well known to some of us as a man of sterling character, who is sure to succeed. We bespeak for him the very kindest regards and good wishes of our entire membership.

A letter received from Mr. D. McKee, our energetic Branch President for Ontario, indicates that things are moving in the East. He has hopes of an increase in membership this year.

Mr. W. F. Thornley of Hamilton, Ontario, sends greetings. He is hopeful of being with us at our forthcoming convention.

With reference to the Convention: the Winnipeg members are planning a series of interesting and instructive meetings. The Secretary will be pleased to write to Municipal Councils on hearing from any member.

He would like to know how things are going in Regina and Calgary. The Executive Council is always pleased to hear from the members.

Annual subscriptions are coming in fairly well. We desire to send our fees to the Canadian Public Health Association at an early date. We would ask the members to help in this by sending in their subscriptions as soon as convenient.



The Provincial Board of Health of Ontario

Communicable Diseases reported for the Province for the Weeks
ending February 7th, 14th, 21st, 28th, 1925

COMPARATIVE TABLE

Diseases	1925		1924	
	Cases-Deaths		Cases-Deaths	
Cerebro-Spinal Meningitis.....	8	4	2	1
Chancroid.....	15	..	4	..
Chicken Pox.....	539	..	600	..
Diphtheria.....	285	17	294	34
Encephalitis Lethargica.....	11	9	1	..
Gonorrhoea.....	216	..	108	..
Influenza.....	..	24	39	15
German Measles.....	13	1	29	..
Measles.....	1576	3	1914	4
Mumps.....	1112	..	787	1
Pneumonia.....	..	241	..	180
Scarlet Fever.....	621	10	940	10
Septic Sore Throat.....	3	..	8	..
Smallpox.....	13	1	125	14
Syphilis.....	163	..	101	..
Tuberculosis.....	158	88	145	101
Typhoid.....	40	3	23	3
Whooping Cough.....	427	8	202	5
Goitre.....	44	3	2	..
Poliomyelitis.....	4	3	2	..

The following places reported cases of Smallpox:

Ottawa 2, Trenton 1, Kenora 1, Indian Reserve (Lambton County)
1, Tehkumah 1, Stephenson 1, Stratford 3 cases 1 death, Kitchener 2,
Niagara Falls 1, Ancaster 1.

Notes on Current Literature

From the Health Information Service, Canadian Red Cross Society,
410 Sherbourne St., Toronto

Municipal Health Department Practice

Fourth report of the Committee on Municipal Health Department Practice, American Public Health Association. "American Journal of Public Health," January, 1925, page 39.

City Milk Control

Some practical aspects of city milk control, pointing out the fallacy of the "Barn Score" scheme of milk control and of any grading of milk as an expression of quality. By James D. Brew, Professor of Dairy Extension, Cornell University, N.Y. "The Nation's Health," January 15th, 1925, page 1.

The Health of the Child

Values in the maintenance of the health of the child. An address to the American Public Health Association by Dr. W. H. Brown, Director, Child Health Demonstration, Mansfield, Ohio. "American Journal of Public Health," January, 1925, page 29.

Well-Baby Clinics

Problems in connection with the administration of Well-Baby Clinics. "The Public Health Nurse," January, 1925, page 17.

The Recognition of Faulty Posture

By L. T. Brown, M.D., Boston, Mass. "The Public Health Nurse," January, 1925, page 7.

Vital Statistics of Canada, 1922

Annual report of the Dominion Bureau of Statistics, giving vital statistics from the Canadian Registration Area for the year 1922. Price, \$1.00, from Dominion Bureau of Statistics, Ottawa.

Fatalities from Accidents

A review of fatalities from accidents in the United States during 1923. "Public Health Reports," U.S.P.H.S., December 26th, 1924, page 3255.

Scarlet Fever

Recent advances in our knowledge of scarlet fever. By the late Dr. W. R. Hodge, University of Toronto. "The Canadian Medical Association Journal," January, 1925, page 21.

Co-operative Buying

An address on centralized buying for hospitals. By A. J. Swanson, Christie Street Hospital, Toronto. "The Hospital, Medical and Nursing World," January, 1925, page 11.

Disaster Relief and the Red Cross

A manual from the League of Red Cross Societies giving general principles for the handling of disasters.

AMERICAN RED CROSS PUBLICATIONS

The American Red Cross has recently issued the following publications:

Junior Red Cross School Correspondence (A.R.C. 618).

First Aid Instruction in Schools (A.R.C. 1006).

Swimming for Health (A.R.C. 1017).

The American Red Cross Garment Manual (A.R.C. 400).

A revised edition of the Manual giving directions and illustrations for the making and packing of hospital garments and supplies.

BOOKS ADDED TO THE LIBRARY

Nutrition and Clinical Dietetics, by Herbert S. Carter, M.A., M.D.; Paul E. Howe, M.A., Ph.D.; and Howard H. Mason, A.B., M.D. Cloth. \$7.50. Pp. 731. Philadelphia and New York. Lea & Febiger, 1923.

Proceedings of the National Conference of Social Work. Cloth. Pp. 652. Chicago, The University of Chicago Press, 1924.

Report of National Conference of Social Work, Toronto, June, 1924.

News Notes

Consequent on the grant of fifteen thousand dollars from the Metropolitan Life Insurance Company to the Canadian Social Hygiene Council for the prosecution and extension of their work, Dr. L. A. Pequegnat has been appointed organizer for the Eastern Provinces. Announcement has not yet been made regarding a western organizer, but one will be appointed, it is understood, at an early date. Dr. L. A. Pequegnat is at present touring New Brunswick in the interests of social hygiene with the able assistance of the Hon. Dr. Wm. F. Roberts, Minister of Health, in that Province.

The services of Dr. G. J. Wherrett have been secured by the Department of Health of New Brunswick for one year, in order to institute and carry on a campaign for Public Health instruction in the way of avoiding the contraction of tuberculosis: the establishment of clinics throughout the province for the detection and treatment of this disease and, generally, to attempt the reduction of the incidence of tuberculosis and the deaths therefrom in this province. Much is expected of this, the latest step taken by the Department of Health of New Brunswick, in the way of reducing the death-rate from this disease which has hitherto been somewhat high in this province.

Somewhat along the same lines of procedure, the Canadian Social Hygiene Council has sent Dr. L. A. Pequegnat to this province for a limited time in order to create popular interest in the curtailment of Venereal Diseases. He will work in conjunction with Dr. Wherrett and under the direct auspices of the Public Health Association of New Brunswick and its local branches in this attempt to abate the prevalence of social diseases in this province.

The annual meeting of the Montreal Anti-Tuberculosis and General Health League was held on March 17th, 1925. The Chairman, Sir Arthur W. Currie, presided. Reports covering the activities undertaken, such as the campaign for a pure safe milk supply and a tuberculosis survey, were given, and mention was made of future plans, which include the immediate establishment of two demonstration areas in co-operation with existing agencies, and a housing survey.

G.C.M.G., K.C.B., LL.D., Chairman; Zéphirin Hébert, Esq., Vice-Chairman; Right Honourable Lord Atholstan, LL.D.; J. Roddick Byers, M.D.; C. F. Martin, B.A., M.D.; Sir F. Williams-Taylor, LL.D.; L. deL. Harwood, M.D.; E. J. C. Kennedy, M.D.; Michael Hirsch, Esq.; Sir Lomer Gouin, LL.D.; Helen R. Y. Reid, LL.D.; Lyon Cohen, Esq.; Louis Colwell, Esq., W. H. Atherton, Ph.D., LL.D.; A. Grant Fleming, M.C., M.B., D.P.H., Managing Director.

Dr. William H. Park of New York addressed a combined meeting of the two Montreal medical societies on the evening of March 11th, the invitation to which was issued in the names of Doctor S. Boucher, Director of the Municipal Department of Health and the Metropolitan Life Insurance Company.

The meeting was presided over by the Presidents of the two medical societies. Dr. Park gave an interesting and instructive address on the present-day knowledge concerning diphtheria and scarlet fever.

It was felt by the meeting that the possibilities of curative and preventive medicine should be taken advantage of, and a committee consisting of the Presidents of the two medical societies, the Deans of the Faculties of Medicine of McGill University and the University of Montreal, the Director of the Municipal Department of Health and the Managing Director of the Montreal Anti-Tuberculosis and General Health League be appointed to consider the subject of the provision of free biological products and the allied one of laboratory facilities, and that they should report a plan to their respective medical societies for approval, and then approach the Government, asking for action.

2332 Galt citizens attended the Canadian Social Hygiene Exhibit which was shown under the auspices of the Galt Social Hygiene Council, and was in charge of Miss Estelle Hewson, Ontario Secretary for the Council, during the week of March 16th. While the Exhibit was being shown, interested citizens and representatives from the Y.M.C.A. and the Boards of Health of Guelph, Kitchener and Woodstock visited the showings, and as a result, requests have come from those cities for the Exhibit. Arrangements have been made to take the Exhibit to St. Catharines for the week of April 6th, under the auspices of the Lincoln County Social Hygiene Council, as part of their local programme.

Editorial

THE CANADIAN CONFERENCE OF MEDICAL SERVICES

In the current issue we are enabled by the courtesy of the Canadian Medical Association to print a number of the papers read at the Conference of Medical Services held in Ottawa, last December. A perusal of these papers will repay our readers.

This conference—the first of its kind to be held in the Dominion—will, it is hoped, be an annual affair. Such meetings will do much to develop a proper spirit among the physicians of the Dominion as well as among the people at large. For the private “practice physician” and the health officer to get together occasionally should be of the greatest value to both. Nor is it less desirable for the man on the street to realize that the physician is beginning to emphasize the fact that he is really part of the health conserving machinery of the country rather than only a friend in time of need. For after all that is what it is coming to and the sooner we realize it the better.

ANOTHER ARGUMENT

There are many reasons for emphasizing the desirability of a co-ordinated health programme for Canada with the Dominion taking the lead. Many of these have been brought forward during recent discussions, but none are more striking, perhaps, than those having to do with the problem of immigration.

Some of the following statistics are worth quoting. Of 2,486 prisoners in Canadian penitentiaries 710 or 28% are foreign born. Of the prisoners in Montreal Jail 32% are foreign born. Of the patients in the Protestant Hospital for the Insane in Montreal 46% are foreign born. Of between 8,000 and 9,000 new venereal cases reported last year in the Province of Quebec 20% were foreign born. Of the new cases admitted to a large venereal disease clinic in Toronto last year 60% were foreigners.

It happens that most of these statistics are from the Province of Quebec, but doubtless a survey of the other provinces would yield equally interesting results. The point proven is simply that if the Dominion Government's immigration policy is of such a character as to permit so many foreigners to become a burden on the provinces, surely the

Dominion should do its part in helping to pay for such results. Surely a permanent co-operative policy would develop a proper point of view on health matters and lend strength to the preventive idea in all parts of the Dominion.

There is a saying frequently quoted by health authorities to the effect that health is purchasable in terms of dollars and that any community can have as much health as it is willing to pay for, and this is quite correct. Both the Dominion and the provinces must shoulder the responsibility and pay out real money if we are to expect to develop the fine sturdy race of people we should have in Canada. Health is not and cannot be merely a provincial matter. The physical effectiveness of the people depends on the Dominion as an entity assuming its responsibility. Shouldering it off on the provinces gets us nowhere.
